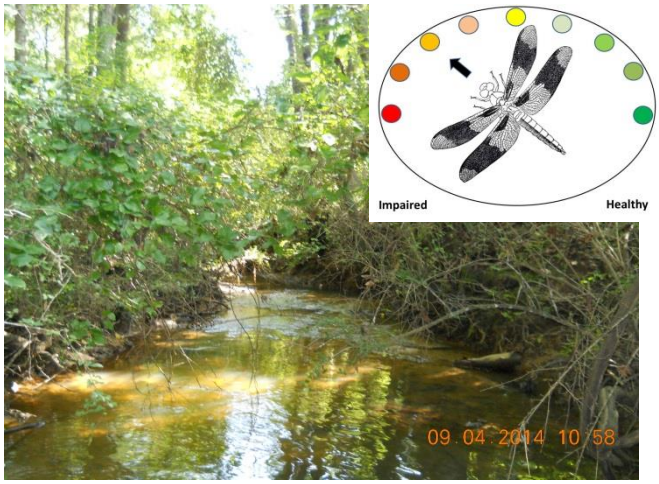
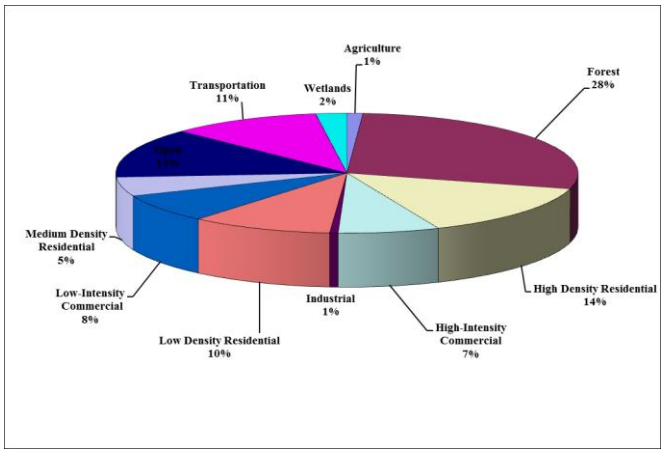
Waterbody: Lafayette Creek



Basin: Lake Lafayette

Lafayette Creek is a slightly tannic stream that flows north and drains into Upper Lake Lafayette. Station 1 (Sample site 65) is located on Apalachee Parkway, while Station 2 (LafayetteCreek3) is located further downstream where Lafayette Creek enters into Upper Lake Lafayette.

As shown in the figure below, approximately 57% of land uses in the 1,577 acre watershed are agricultural, commercial, industrial, residential, or transportation. Increases in stormwater runoff, and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced stream communities may be maintained with some level of human activity, but excessive human disturbance may result in waterbody degradation. Human stressors may include increased inputs of nutrients, sediments, and/or other contaminants from watershed runoff, adverse hydrologic alterations, undesirable removal of habitat or riparian buffer vegetation, and introduction of exotic plants and animals. State water quality standards are designed to protect designated uses of the waters of the state (*e.g.,* recreation, aquatic life, fish consumption), and exceedances of these standards are associated with interference of the designated use.

Methods

Surface water samples were collected to determine the health of Lafayette Creek and met the requirements of the Florida Department of Environmental Protection (FDEP).

Results

Nutrients

Due to low water conditions, FDEP data requirements for the Numeric Nutrient Criteria (NNC) could not be met for 2010 through 2012 for Station 1 (Table 1) or from Station 2 since 2007. While nutrient values did not exceed the state criteria, nutrient levels were elevated when compared to other streams in Florida.

Table1. FDEP's chlorophyll *a*, total nitrogen and phosphorus criteria for streams applied to Lafayette Creek.

Lafayette Creek Station 1	Total Nitrogen Threshold 1.03 mg/L	Total Phosphorus Threshold 0.18 mg/L
2008	0.77	0.16
2009	0.59	0.18

Lafayette Creek Station 1	Total Nitrogen Threshold 1.03 mg/L	Total Phosphorus Threshold 0.18 mg/L
2010-2012	-	-
2013	0.76	0.10
2014	0.47	0.07

Based on three results, the 2014 Station 2 geometric mean for total nitrogen (0.25 mg/L) and total phosphorus (0.08 mg/L) are below the NNC thresholds.

Fecal coliforms

As with previous years, Station 2 continued to show exceedances of the Class III water quality criteria for fecal coliform bacteria (Figure 1).

Turbidity

Elevated turbidity values were identified in past sampling and remain somewhat an issue for Lafayette Creek. Station 1 values in 2014 ranged from 2.6-18 NTU. Due to low water, only two results were collected from Station 2. Turbidity results were low, ranging from 1.9 to 5.4 NTU. Although the turbidity results are not a violation, sediment can coat the bottom of a streambed, filling pools, and covering natural habitat of species that live in and utilize the creek for resources. Suspended sediment can also reduce visibility, as shown by the elevated turbidity levels.

Iron Bacteria

As mentioned in previous reports, the sediment in Station 1 has an orange/brown cast. This is the result of naturally occurring iron bacteria. Iron bacteria are a group of bacteria that grow by producing enzymes that promote chemical reactions involving iron within the water. After a number of reactions, the dissolved iron in the water converts into insoluble iron hydroxides, forming a brown/orange mass of gelatinous material that coats surfaces under the water. This often occurs in streams that receive "seepage" from subsurface water flow. While it may appear unsightly, there is no evidence to suggest that it is harmful to human health, but there is a potential loss of animal habitat in the tributary due to the ferric iron precipitate covering existing habitat.

Exotic Plants

Several species of exotic plants line the bank of Lafayette Creek including wild taro (*Colocasia esculenta*) and privet (*Ligustrum* spp.). In many cases, exotic plants will crowd out and replace native plants. This may stress native wildlife, which have evolved to depend on native plants for food and shelter. The native wildlife may move away or perish if the native vegetation is replaced by exotic plants.

Click here for more information on common exotic and invasive plants in Leon County wetlands and waterbodies.

Other water quality parameters appear to be normal for the area and no other impairments were noted.

Conclusions

Based on ongoing sampling, Lafayette Creek met the nutrient thresholds for the East Panhandle region. Station 2 continued to show exceedances of the Class III water quality criteria for fecal coliform bacteria. Elevated turbidity values were identified in past sampling and remain somewhat an issue for Lafayette Creek. Several species of exotic plants line the bank of Lafayette Creek which may affect native wildlife dependent on native plants for food and shelter. Other water quality parameters appear to be normal for the area and no other impairments were noted.

Thank you for your interest in maintaining the quality of Leon County's water resources. Please feel free to contact us if you have any questions.

Contact and resources for more information

www.LeonCountyFL.gov/WaterResources

Click here to access the results for all water quality stations sampled in 2014.

Click here for map of watershed – Sample sites 65 and LafayetteCreek3.

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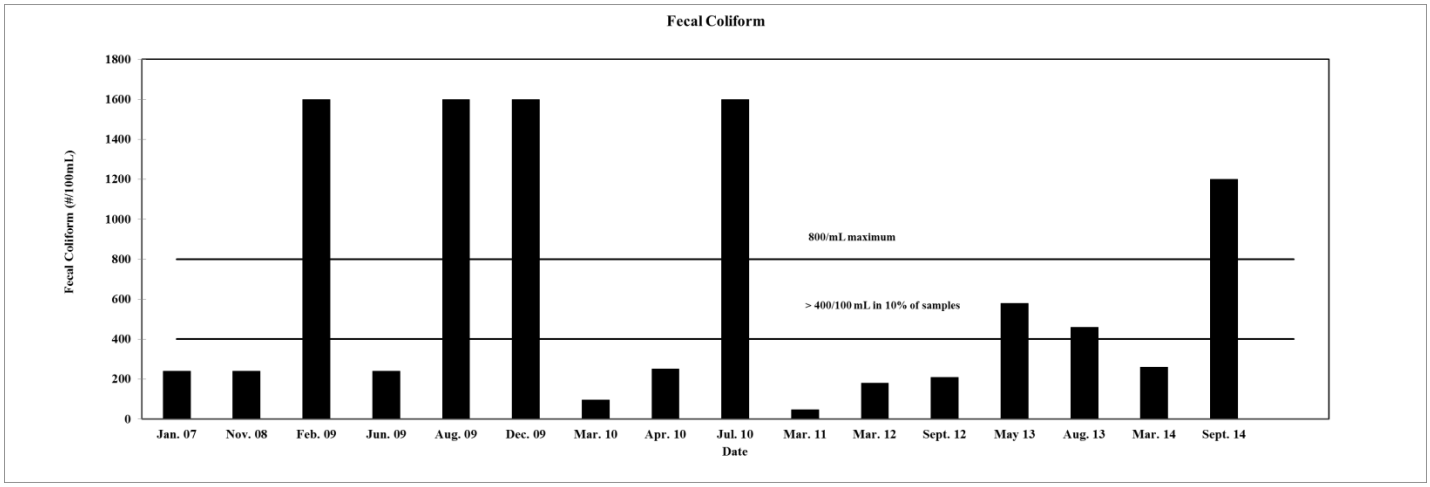

Figure 1. Lafayette Creek LafayetteCreek3 fecal coliform results.